

Mapping Professional Development Opportunities:

A Pilot Study of Two Subjects in Three Regions in Kentucky



Partnership for Kentucky Schools

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I. INTRODUCTION

The Kentucky Education Reform Act (KERA) brought radical changes in professional development for teachers in Kentucky. The reforms included increased funding and four days for professional development (initially with an option of requesting up to five additional days). Districts were required to appoint professional development coordinators. Staff development committees were established in the schools to set priorities and develop plans. Regional Service Centers (RSCs) were created by the state and charged with building school capacity. More money, more time, and more help meant more professional development for teachers.

Since the passage of KERA in 1990, these original arrangements have been modified a number of times. Among the key changes have been the allocation of 65 percent of the professional development funds to schools, introduction of consolidated planning, elimination of the optional five days, restaffing of the RSCs with consultants in the core content areas, and development of regional content academies by the Kentucky Department of Education (KDE). However, state policymakers have resisted attempts to reduce funding for professional development. For the most part they have remained committed to providing professional development for teachers, and changes they made have been intended to improve its quality and relevance.

As further evidence of their commitment, many of the state's education and legislative leaders have participated in roundtable discussions about professional development over the past four years. These meetings were sponsored by the Partnership for Kentucky Schools (PKS) and supported by The Pew Charitable Trusts and Annie E. Casey Foundation. The focal point of these roundtables has been a multi-year study of professional development in Kentucky supported by the aforementioned

foundations. These discussions have surfaced a number of issues, and led to some of the policy changes made by the legislature and KDE.

One issue that policymakers and practitioners frequently expressed concern about was the availability of learning opportunities for teachers that were aligned with the curriculum they had to teach. This concern was reinforced by evidence presented by the PKS researchers.¹ They found that most of the time and money available to schools and districts for professional development in the first five years of the reform were largely devoted to learning new procedures such as implementing the new assessment requirements or the organizational and governance reforms. The time being allocated to instructional improvement was usually focused on generic teaching practices such as cooperative learning or classroom management. Further fueling these concerns was evidence that many Kentucky teachers lacked the content preparation that some believed was necessary to teach to the new state standards.² However, understanding of subject matter knowledge and how children learned or failed to understand curriculum content were seldom the foci of local professional development during the first half of the decade.³

These concerns led some members of the PKS team to hypothesize that the policy theory underlying the system of professional development created by KERA was incomplete. This theory basically held that the provision of increased time and money for professional development and the shift of control over these resources from districts to the schools would generate strong demand for higher-quality and more relevant learning experiences for teachers. The policy anticipated that over time school staffs would become increasingly more sophisticated and focused consumers, and that the marketplace would respond to them by providing better learning opportunities for teachers.

The researchers believed that there were serious imperfections in the operation of the market for professional development in Kentucky. As a consequence, state policies were not generating the kinds of opportunities most needed by teachers and envisioned by policymakers. On the demand side, researchers believed that the high-stakes accountability system generated a search for quick fixes rather than the development of instructional capacity. Fluctuations in annual state test results for schools, lack of evidence about the effects of professional development, and staff turnover meant that professional development priorities in schools changed frequently. Additionally, the consolidated planning process required students to focus on areas of poor student performance on the state assessment. As a consequence, there were seldom the kind of sustained efforts that were most likely to lead to significant changes in classroom practice. In addition, lack of experience in developing or selecting learning opportunities meant that school staffs were seldom discriminating consumers. Further, it was hypothesized that the emphasis placed by KDE on whole school change had encouraged school staffs to select professional development experiences that all teachers could participate in. This led to a focus on procedural and generic knowledge and superficial experiences. The needs of individual teachers, including disciplinary knowledge, were being neglected.

On the supply side, the universities, the major providers of curriculum-related learning experiences for teachers prior to KERA, were either unwilling or unable to respond to the new demands for curriculum related professional development. A second problem was that most of the private providers were too small and undercapitalized to develop high-quality curriculum-related professional development.⁴ Design and development of experiences to deepen teachers' knowledge of algebra, their ability to diagnose or address reading problems, or their understanding of

how children learn key mathematics concepts such as estimation and probability required more expertise and resources than teaching teachers how to do cooperative learning or score portfolios. For private providers to secure an adequate return on such investments, they had to raise considerable capital and gain control over a large share of the professional development market. But most of the providers were individual consultants or small firms who had finite amounts of time to sell and were satisfied with small market shares.

Moreover, the market was badly fragmented as a result of the devolution of control to the schools, and most providers had to negotiate with one school at a time. This made the market less attractive to highly capitalized organizations looking for large markets for their services. Only highly subsidized activities like the regional and state systemic initiatives supported by the National Science Foundation or foundation-supported initiatives like Different Ways of Knowing could undertake the development of curriculum-related professional development in this environment. RSCs and other state-supported initiatives had been actively discouraged from undertaking such work because of the fear that it would be viewed as being prescriptive. In any case, they could not afford the costs of development.

Another problem on the supply side was that the legislature stipulated in the statute that professional development should focus on the implementation of the law's components and related teaching procedures and techniques. From 1991 to 1996, this was KDE's focus, and the RSC staffs focused on implementing school-based councils, the primary program, the new assessments, and other components of the reform. Curriculum development was the responsibility of the schools under KERA, and it was not seen as the proper role for the state. As a consequence of these various market imperfections, there was an inadequate supply of curriculum-related professional develop-

ment, and teacher knowledge of curriculum and pedagogical content knowledge were neglected.⁵

In 1998, the PKS research team proposed that it address some of the questions being raised in the roundtables about the supply of learning opportunities designed to deepen teachers' content knowledge. They proposed to replicate a study conducted earlier in Cincinnati by Dr. Jane Butler Kahle and her associates.⁶ Dr. Kahle had been asked to undertake this study because district policymakers were concerned that the formal professional development opportunities available to teachers in Cincinnati were not meeting their needs. They had concerns similar to those raised in Kentucky. Dr. Kahle interviewed the staff of the major providers of such services—the universities, state technical assistance agencies, the Mayerson Academy, the teachers' union. She did a simple “mapping” of what they were providing by grade level and subject area. This analysis revealed some serious gaps and many redundancies. For example, while there were many opportunities for elementary teachers to learn techniques of teaching mathematics, there were few designed to deepen their knowledge of the subject. There were few opportunities at all for middle school teachers in either mathematics or science. And even though the district had many high school students with reading problems, little attention was being given to improving the teaching of reading for this age group. These and other findings led Cincinnati officials to initiate discussions about the priorities and the redesign of learning opportunities with the providers serving their teachers.

The PKS research team felt that similar problems existed in Kentucky and that the approach used in the Kahle study could be effectively replicated there. The research team proposed an exploratory study of the opportunities in language arts and mathematics in three regions. In effect, the team set out to

“map” the opportunities available to teachers to improve their knowledge and skill in “teaching the language arts and mathematics that students had to master to meet the state standards. This is a report on the findings of this exploratory research.

II. RESEARCH QUESTIONS AND METHODOLOGY

The original research design for the “mapping” study was ambitious and somewhat naive. The intent was to refine the Cincinnati approach by categorizing the learning opportunities and needs according to the topical headings in the state's mathematics and language arts core content standards. The result would provide both policymakers and providers with more information about the nature of the match between the core content standards and the content of the available learning opportunities for teachers.

Pilot interviews conducted in the spring of 1999 revealed that this goal was much too ambitious. Two serious obstacles were encountered almost immediately. First, there were many small providers—consultants who were working with one or two schools. It was difficult to identify them and even more difficult to contact and interview them. And their “programs” were often poorly defined.

The second problem was even more serious. It was virtually impossible to accurately link the content of professional development experiences to the core content standards. The content of programs for teachers often cut across a number of the standards without covering any of them thoroughly. Program titles and descriptions were often misleading and inadequate for purposes of categorization. Moreover, providers had no incentives to take the time to provide such information. Some simply did not think about the content of their programs and materials in terms of the state standards. Even if they did, there was

seldom any documentation, and it was difficult to extract such information through telephone interviews.

It quickly became clear that much more intensive field observations and highly detailed surveys would be required to collect such information. It was also clear that the fieldwork required would be beyond the resources and timeframe of the proposed study and that surveys would be difficult to develop and even more difficult to administer.

A similar data problem existed on the school side. There was seldom a single informant in a district who knew enough about the details of the professional development being provided in each school in both mathematics or language arts to be able to match the content of activities with the standards. This meant that detailed data would have to be collected school by school, which raised the same data collection problems as those faced on the provider side.

As a consequence, the research team decided to address a simpler set of questions that still would generate useful information for policymakers. We settled on the following four basic research questions:

- How are professional development needs being determined?
- What is actually going on in mathematics and language arts professional development?
- What needs do key stakeholders perceive as being unmet?
- What are the barriers to providing the curriculum-related professional development that observers felt teachers need (and perhaps want)?

These questions guided the research conducted during the 1999-2000 school year.

Data Collection. The research team consisted of a senior researcher from the Consortium for Policy Research in Education who guided

the design of instruments and data analysis, and two research consultants who conducted the interviews in the field and did the initial cross-site analysis. One of the research consultants was a math educator; the other had expertise in reading/language arts. Both were experienced classroom teachers as well as qualitative researchers.

The three researchers attempted to identify the learning needs and opportunities for teachers in mathematics and language arts by triangulating information from three sources: the district professional development coordinators, the regional service center staff, and staff of major professional development providers. The positions of those interviewed are listed in Appendix A. The interviews followed structured protocols that permitted the interviewers to ask follow-up questions for detail and elaboration. The protocols are contained in Appendices B and C. The interviews with district professional development coordinators were supplemented with a short survey (Appendix D).

The response rates to requests for interviews and to the district survey were good. The requests for interviews generally were greeted with positive responses, although it was often hard to schedule interviews with providers. The interviews conducted in each field and organized by the roles of the respondents are displayed in Table 1. Table 2 displays the response rates for the surveys by region. Seventy percent of the district professional development providers who were asked to complete the survey submitted usable responses.

TABLE 1
INTERVIEWS COMPLETED FOR THE MAPPING
STUDY BY ROLE AND SUBJECT

Roles/Affiliations	Language Arts	Mathematics
KDE	1	1
RSC Directors	2	2
RSC Staff Consultants	7	4
Professional Development Coordinators	7	8
Cooperative Directors	2	0
University Partners	2	6
Providers/Vendors	4	5

TABLE 2
SURVEYS RESPONSE RATES BY REGION

Region	No. of Districts Region	No. of Surveys Returned	Percentage Returned
Region 2	29	18	62%
Region 6	32	23	72%
Region 8	15	12	80%
Total	76	53	69.7%

One further data issue concerns the number of teachers teaching either mathematics or reading/language arts in each region, and how many were teaching in the elementary, middle, and high school grades. The data were not readily available from either KDE or the regions. Assembling numbers by hand in each region promised to be time-consuming. The research team only needed a rough estimate in order to determine if each level of schooling was receiving its fair share of professional development opportunities. So the team pulled staff rosters from two districts and, with the assistance of district personnel, identified all of the professional staff assigned to teach reading/language arts and mathematics. These data were then used to estimate the percentages of each district's teaching force who were teaching these subjects at each of the three levels. Our estimates for the two districts were similar: roughly 80 percent of all of the teachers who taught reading/language

arts and/or mathematics were in grades K-5, 10 percent were in grades 6-8, and 10 percent were in grades 9-12. This makes sense when you consider that virtually every elementary classroom teacher teaches both language arts and mathematics, and that most of the remedial or support teachers teach one of these two subjects with most of these assigned to the elementary grades. Conversely, teachers are specialized in the middle and high school grades so only a portion of them teaches language arts or mathematics.

III. THE PROFESSIONAL DEVELOPMENT “SYSTEM” IN KENTUCKY

How was the system of professional development created by KERA functioning in the late 1990's? In this section we examine the roles being played by various actors and organizations in the “system” and examine the influence they were exerting on the professional development which teachers were receiving. The primary tool for defining needs, identifying strategies and topics, and allocating resources for professional development was the school improvement plan. The original School Transformation Plans required by KDE under KERA had included a separate professional development plan. However, the Consolidated Plan (hereafter referred to as “the plan”) which replaced it tied resource allocation, both human and fiscal, to school improvement, and professional development was linked to improvement objectives and embedded throughout the plan.

School Planning

The primary responsibility for identifying professional development needs rested with school staffs and school councils. In most cases, the needs were being identified through an analysis of student achievement data from the state assessment. The resulting priorities were used to develop a two-year consolidated

plan for the school, which included professional development. The plans were supposed to be flexible, and could in theory be modified to meet emerging needs. The school professional development coordinator, the principal, the school council, and the district professional development coordinator all had some responsibility for monitoring its implementation.

The plans were developed by committees of stakeholders in each school and were approved by the school-based decision making council, if the school had one, or by the district board of education, if it did not. Data from the previous year's state assessment as well as other indicators of how well students were meeting standards, both cognitive and non-cognitive, were analyzed to develop the agenda for school improvement. Professional development priorities were then identified based on staff judgments about what improvements in the knowledge, skills, and teaching practices of the adults in the school would contribute most to improved performance by students. The focus was typically on deficiencies in student performance or problems of particular subgroups of students.

The timeframe for acquiring new knowledge and skills was heavily influenced by the two-year accountability cycle. One of the unintended outcomes of setting targets for schools and judging their performance based on their achievement of the targets was that the improvement agenda for a school fluctuated annually. Imagine a school that had poor reading scores on the state assessment. Professional development would be shifted for a year or two to reading. If scores went up, and the short-term targets were met, attention might be shifted to mathematics or writing or science if targets were not being met in these areas. Even if reading scores remained critically low relative to state standards, the focus might shift. The rate of improvement rather than the absolute level of performance drove school

priorities and often the focus of professional development. This made it much harder for school staff to remain focused on making particular changes in instruction and curriculum long enough to have deep effects on classroom practice.

This analysis of assessment data by schools was typically supplemented with surveys of school staff to solicit their ideas about professional development. This might be done by school or district staff. Non-certified staff might be surveyed as well. Professional development needs of instructional aides, clerical workers, food service workers, maintenance workers, and bus drivers were often identified in this manner.

Outside assistance agencies, external evaluators, or critical friends also influenced professional development decisions. For example, schools involved in Comprehensive School Reform programs (CSR) or major curriculum reforms often received feedback from the developers of the models they had adopted. This feedback might suggest areas of need. If a school was making major curriculum changes or implementing a comprehensive school reform model, all four days of professional development might be devoted to this work. Accreditation visits also evoked analysis of professional development needs, either during the self-study or through questioning by the visiting team. The Scholastic Audit and the Program Efficiency Audit, two state review processes developed for schools that failed to meet their performance goals, also were sources of needs data for schools and districts and influenced their priorities.

In some cases, professional development needs emerged organically from broader social concerns. An example of this was the attention to programs to stem school violence and create "safe and orderly learning environments and schools" that emerged after the tragedy in Colorado. Another example was the increased

awareness of “public leadership” as a competency required of high-performing principals.

School Professional Development Coordinators

School committees sometimes identified professional development opportunities and/or providers, but in many instances, they sought assistance from district, cooperative, regional service center, or KDE staffs. Some district professional development coordinators actively participated in this process. Others did not. RSC staffs often played key roles, helping to identify appropriate professional development opportunities to meet the needs of school and district staff, and suggesting possible professional development providers. The RSCs also played a lead role in the development of the school plans, providing workshops and on-site technical assistance as schools and districts develop their plans.

School professional development coordinators were teachers who volunteered to take the lead in this work. Although they were usually assisted by a committee, it was a demanding, and often an unrewarding, job. As a consequence, there was considerable turnover in this position, which limited organizational learning, position authority, and institutional memory. The job was frustrating in part because some teachers just wanted to satisfy their four-day requirement, and others wanted the flexibility to meet the time requirement during the summer so they could take courses counting toward advances in their salary ranks. In many schools funds were allocated to support the professional development preferences of individuals such as attending professional meetings or taking courses. Known as flexible professional development, these activities were often less clearly linked to school needs. In addition to satisfying teacher desires, a school coordinator might find that the principal had strong preferences or preferred activities that the school council would under-

stand and approve or which could be easily implemented. There was also some public resistance to professional development when it took teachers away from their classrooms or was perceived as being too costly. Problems with finding substitute teachers, parents resenting teachers being out of the classroom, and reluctance to pay for teachers to leave the area were frequently cited problems.

Frustration also arose because of the difficulty of providing the kind of professional development advocated by experts. Most school coordinators interviewed for this study knew that follow-up was important, but it was rarely provided. The coordinators did not have the authority, time, or skill to do it themselves, and they had little influence over what principals did. The efficacy of job-embedded professional development such as coaching, mentoring, and demonstration teaching was also recognized by many of the coordinators, but few were able to pursue it. These forms of professional development were viewed as expensive, harder to schedule, and more intrusive. Proposals to try such approaches often met with resistance from teachers.

These coordinators received no release time to do their work. They often faced criticism from disgruntled teachers or from members of the council, including parents, who had different agendas than the school committee. There was typically not enough money to address schoolwide or curricular needs and also support individual interests. Thus the turnover among coordinators was high. So the capacity to plan professional development and to match needs and activities at the school level might not be improving as the policy theorists envisioned. Due to frequently changing agendas, lack of data on impact, and the turnover of school coordinators, there appeared to be less organizational learning about professional development than had been anticipated.

The Role of Districts

Under KERA, the role of the school district in planning and carrying out professional development has been severely curtailed. Yet central office staff have retained control over some funds and can exercise considerable influence over decisions made by the schools. The key person at the district level is the district professional development coordinator (hereafter, referred to as the “district coordinator”). Since the position was established in 1990, these central office staffers have reviewed school plans but have had no formal role in their approval. They have been expected to help the schools with setting priorities and finding or designing appropriate opportunities for professional development. In some cases, they have monitored the implementation of the consolidated plans. Some of them have taken the initiative to identify common areas of need among the schools in the district. Since the districts can retain up to 35 percent of the state professional development funds to support district-led initiatives, supplement school funds, or support travel to conferences, district initiatives sometimes have been designed to address these common needs. Some district coordinators also have written proposals to raise additional funds for their schools or districts.

Most of the district professional development coordinators interviewed realized that they should be trying to focus and coordinate all of the funds available for professional development in order to “buy” more time and expertise and ensure greater impact. But this was proving to be hard work. Some school council members and principals viewed their efforts as intrusive and ignored them. So did some central office personnel who controlled other state or federal funds for professional development. Efforts to consolidate or coordinate funds from Title I, Eisenhower, Goals 2000, vocational education, special education, and other sources often met with resistance. These

internal “turf” battles used up political capital, and few of the coordinators interviewed were willing to persist when they met with resistance. The benefits were intangible and long-term, but the costs were real and immediate. There was more coordination on paper than in practice according to the district professional development coordinators interviewed by the research team.

The influence of the district coordinators and other central office staff on the professional development provided for teachers appeared to be shaped by a number of factors. It depended in large part on their personalities, energy, expertise, and networking skills. If they were well established and well connected in the district, they were more effective. If their curriculum and professional development expertise won them respect from school staffs, they were likely to have greater influence. If they had demonstrated the capacity to help schools by finding additional resources or good opportunities for improvement, they were more influential.

In most districts, the professional development coordinator position was a part-time job, and the incumbent wore several other hats. The responsibilities were not well specified and a passive incumbent could minimize them. In such circumstances, coordinators did not always have the time or the inclination to develop the strong and positive relationships with the schools and external professional development providers necessary for effective brokering.

The roles played by these district staff were also shaped by the political culture of the district and the history of the relationships between the board and the councils, the central administration and the schools, and central office staff and teachers. Where these relationships were good, a skillful district coordinator could play an important leadership role. In sum, the function and influence of the cen-

tral office with respect to professional development varied widely across districts.

Cooperatives

Districts in Kentucky have formed cooperatives to take on tasks made easier or more efficient because there were economies of scale. Some of these cooperatives were actively involved in professional development. In one case it was almost all that the cooperative did. They also were providing information to their members about professional development opportunities. These organizations also were administering needs assessments to district and school staffs. If a district belonged to a cooperative, the cooperative staff reviewed the consolidated plans of its schools. This allowed the cooperative to provide or broker professional development that was aligned with school plans. Generally, the cooperatives were offering workshops or courses that met the common needs of the schools in member districts.

Regional Service Centers

The staff at the Regional Service Center (RSC) also reviewed school and district plans. Areas of need were identified, resulting in the determination of regional priorities. Like the cooperatives, the RSCs were delivering and brokering professional development. However, the RSC roles were also shifting. RSC consultants talked about their focus on high-needs schools, state training initiatives, and academies. They described these emphases as coming “straight from the top.” RSC staffs were planning content academies, and with their heavy follow-up commitments, these were expected to consume considerable staff time.

Working with high-need schools posed the greatest challenge to RSC staff. Highly skilled educators had been assigned to work with the neediest schools directly, but RSC staff were charged with addressing the needs of the remaining low-performing schools. They were

expected to carry out these responsibilities in addition to fulfilling their day-to-day commitments to all other districts and schools in their region. This was a major challenge for individuals who already felt spread too thin.

The RSC staffs were providing training in support of state programs such as literacy, marker papers, reading leaders, and portfolios. Although they were doing as much of this work as possible themselves, it was often necessary for them to identify consultants for the provision of specific workshops such as how to use a graphing calculator. No wonder that two of the three RSC math consultants interviewed said that one of their major desires was a comprehensive annotated list of providers who could help with different topics. They envisioned lists that would include presenters associated with programs such as the Appalachian Regional Systemic Initiative (ARSI) and *Everyday Math*; experts in math and writing; and coaches to work in schools in the content areas.

Private Providers

A variety of private consultants and small firms were providing professional development in the three regions in 1999-2000. Many were local individuals; almost all of them lived in Kentucky. In the more rural regions, these consultants were often local university personnel. Others were former RSC or KDE employees who had strong connections with district personnel. Most of these individuals delivered one or two-day workshops and were hired by the day by schools. Some of them had developed longer-term relationships with schools or districts and did some follow-up work in the schools. A small number of schools were involved with comprehensive school reform developers from out of the state. In general, technical assistance and follow-up from these remote partners were described as sporadic or weak. Two notable exceptions were Different Ways of Knowing and Reading Recovery, both

of which had in-state staffs and provided considerable on-site support.

State Initiatives

Regional and/or statewide initiatives undertaken by KDE were often designed in response to patterns of failure or non-achievement. The content academies are one example. They were created in response to the widespread perception that many teachers needed to deepen their own knowledge of the curriculum in order to help students reach the standards, and that too little attention was being given to this issue. The Marker Paper project is another example of a state initiative that resulted from identification of a common need. Although standards had been set for each level of proficiency (e.g., novice, apprentice, proficient, distinguished), it became apparent that there was no common understanding among teachers about what student work at each level of performance looked like. “How good is good enough?” was a question asked by many teachers. Using exemplars (“marker papers”) and a six-hour training program, the project was helping teachers develop a common vision of what a student product should look like to meet the standard of proficiency.

Summary

The professional development system in the three regions was being driven by perceptions of needs, which in practice meant that it was largely driven by the results on the state assessment. The school planning process was always playing catch-up as new assessment data arrived each fall while plans for the school year’s professional development had already been set in motion. This cycle of planning and activity reinforced the tendency of school staffs to look for professional development that could produce immediate effects. By the time school staffs had looked at their assessment data, identified needs, and determined courses of action, they were only a few months

away from the next round of state testing. This was living on the edge, and it did not seem to be encouraging continuous improvement or sustained engagement in professional development as much as it encouraged a frantic search for some elixir that would set a school on an upward trajectory.

The opportunities available in the immediate environment also had a heavy influence on local investments in professional development. If the RSC offered a program in the right area, many schools participated because it was convenient. Few questions were asked about quality or impact. The existence of state grants for literacy programs, of state or federally funded programs such as the Appalachian Regional Systemic Initiative (ARSI) and well-established and respected programs such as those offered by the Badgett Center exercised a powerful influence on local choices.⁷ Few schools or districts departed from conventional patterns to develop their own strategies of instructional improvement and unique approaches to professional development.

Many of the district coordinators and RSC staff seemed to have internalized a set of quality standards for professional development that gave priority to intensive, curriculum-related learning with follow-up support. When such opportunities were available, they worked hard to encourage teachers to participate, but often they were working against the immediate pressures of the accountability system and the norms of their school and district cultures. While a few of them seemed to have gained considerable influence over district and school investments, they appeared to be exceptions to the general rule.

IV. PROFESSIONAL DEVELOPMENT IN LANGUAGE ARTS/READING

In the next two sections, we report on our findings about the nature of the professional development opportunities available for teachers in language arts/reading and mathematics during the 1999–2000 school year. Using brief surveys, we asked district professional development coordinators in three of the state’s eight regions to describe what their districts and schools were doing during the current school year to address the professional development needs of teachers. In reviewing their responses, we looked for activities that lasted for half of a day or more, including sequences of half-day events on the same topic, and categorized them according to their general content. We also looked for activities that represented shifts from the pattern of one-shot workshops to sustained professional development over time and from the narrow view of professional development as teachers attending workshops. (A broader view of professional development would include hands-on experiences and job-embedded learning such as mentoring, coaching, study groups, and action research.) While the more traditional view of professional development continues to be the norm, there were some interesting deviations from this pattern in the responses to the survey.

The respondents identified the “major” professional development activities in their districts—even though many of them were only three to six hours in length. Our definition of major was anything that took six hours (one workday) or more during the school year. This produced long and fragmented lists for each district that left many questions unanswered. For example, it was sometimes hard to tell if a listed workshop was part of a larger initiative or an integrated series of events, or if it was a stand-alone. Since respondents sometimes gave the names of presenters without identifying their affiliations, it was also hard to know if presenters

were independent consultants, in-district providers, part of a network of literacy or mathematics teachers, or associated with organizations or vendors. Still, we were able to overcome most of these problems by checking with informants in Kentucky and making inferences from the data. As a consequence, we were able to draw some conclusions about the major themes and patterns in professional development.

As we asked survey respondents only to list the “major” professional development activities underway in their districts and schools in these two content areas, we cannot presume anything about the other professional development being offered in these districts. This is only a description of activity in these two curriculum domains. Also, most of the district coordinators listed the major activities in their district, even when only some of the schools were participating. Data collected on the numbers of teachers involved in activities is incomplete and provides only rough estimates of the level of participation in various activities. Thus the descriptions provided below may not reflect “typical” professional development in a hypothetical, average school. However, they do describe the range of activity.

Learning Opportunities

Interviews with a variety of individuals involved in professional development and the responses of the district coordinators to the Partnership for Kentucky Schools (PKS) survey indicated that a great deal of professional development was being offered in language arts/reading during the 1999–2000 school year. Language arts/reading or literacy was described as a high priority by 15 district coordinators of the 53 who responded to the survey, and writing was mentioned as a priority by a half dozen more. Moreover, 39 of the 53 districts reported significant professional development activities had been planned for 1999–2000 in language arts, reading, writing,

and literacy. Most of them reported multiple activities. Typically only a few schools were involved in each activity in a district, but 11 districts reported activities involving all of their schools or all of their elementary schools.

Language arts/reading professional development activities of more than a total of six hours duration (this time could be spread over several days) were categorized into seven areas (Table 3 below). These categories were developed from review of the responses; they are as follows:

- Literacy curricula, including comprehensive school reform programs;
- writing strategies;
- reading strategies;
- curriculum alignment and articulation;
- applications of technology;
- assessment and use of assessment data; and
- other.

Additional categories such as raising expectations, teaching diverse learners, and making connections across the curriculum were considered in the analysis but either proved a poor fit or were too fine-grained for the information available.

Much of the activity described in the surveys and interviews was intended to improve teaching skills in reading and writing. However in the area of literacy, it is difficult to separate content and pedagogy as the techniques of teaching reading and writing form the central content that teachers and students must master. Therefore, in Table 3 below, we have not made a distinction between content knowledge and pedagogical knowledge. We have distinguished between professional development intended to support the adoption of a particular language arts or literacy curriculum, such as balanced literacy or the reading programs of Success for All or Different Ways of Knowing and those focused on narrower instructional strategies. The latter are categorized as reading or writing strategies in Table 3.

Teaching teachers reading strategies was the most common activity, followed in frequency by professional development designed to support implementation of specific literacy programs. For example, nearly a third of the districts reported schools offering professional development for the Accelerated Reader program. Much of this activity was connected to grant awards, especially the Reading Excellence Grants and the Early Reading Incentive Grants. There were also many sessions on portfolio assessment. Some of the activity described was connected to the demands of the state assessments, for example, the state's marker paper project. Districts also reported that teachers were participating in state and national conferences, and some schools and districts were organizing teacher panels around best practices in reading and writing.

The data in Table 3 show that the person-days allocated to professional development in reading/language arts closely approximates the 80–10–10 distribution of language arts teachers described previously. However, many district coordinators reported that were different priorities in the language arts at the elementary, middle, and high school levels. The data in Table 3 reveal much more attention being given to reading in the elementary grades and more attention to writing in the high schools. Combining support for implementation of literacy curricula and reading strategies reveals that 59 percent of the activity in the elementary grades was focused on reading. At the high school level, there was no professional development associated with implementing literacy or language arts curricula and only about 14 percent of the person-days were devoted to reading strategies. The data also show much more attention to assessment practices and alignment and articulation in the secondary schools than in the elementary schools.

TABLE 3
LANGUAGE ARTS/READING PROFESSIONAL
DEVELOPMENT OPPORTUNITIES IDENTIFIED IN THE
DISTRICT SURVEYS

	ES	MS	HS
Total Person–days	9798	1806	1555
Percent of the total at all levels	74.5%	13.7%	11.8%
Domains of Professional Development			
Literacy Curricula/Comprehensive School Reform Designs	28.0%	6.6%	10.0%
Writing Strategies	16.9%	27.4%	17.4%
Reading Strategies	31.4%	17.1%	13.6%
Alignment and Articulation	4.7%	15.5%	14.8%
Technology for Instruction	0%	5.1%	5.0%
Assessment and Use of Data	9.0%	15.2%	20.7%
Other	10.0%	13.3%	18.8%
Column Totals	100.0%	100.2%	99.9%

Many elementary schools reported adopting school–wide reading and/or literacy models. Accelerated Reader was mentioned most often. Other programs included Fast Forward, Reading Recovery, Project READ, Benchmark Reading, Reading Mastery, Different Ways of Knowing, Fluency in Reading, Writing to Read, Success for All, Great Books, Great Leaps in Reading, Balanced Reading Program, Reading Renaissance, and Sing, Spell, Read and Write. Elementary schools were also reported to be participating in the state–developed marker paper training. In many cases, entire faculties were participating in this activity.

With the exception of Region 8 there was not a heavy emphasis on reading in secondary schools. All of the 53 districts responding to the survey listed some kind of available professional development for elementary school language arts, but 25 reported no activity at all in reading for middle schools and 32 reported none in their high schools. Similarly only 18 of 53 districts reported activity in writing for middle school teachers and only 15 reported it for high school teachers. Twelve districts

reported no professional development at all in their middle or high schools for language arts or reading. This could reflect gaps in our data collection or a lack of knowledge on the part of some district coordinators, but our interviews suggest that the general pattern is correct. And given the needs of secondary students for good reading instruction, it is a striking pattern.

Respondents reported that the most frequent middle school activities were related to writing strategies, curriculum alignment, and assessment. A few sites reported some professional development based on the Accelerated Reader and other literacy models. High schools also reported the lowest overall level of language arts/literacy professional development. Writing workshops were the most common activities and some schools were involved in the state–developed “reader leaders” program. Several high schools are involved in the High Schools that Work model and reported school–wide professional development around the implementation of this comprehensive school reform design.

We also looked at differences in time allocations for professional development across levels. As Table 4 displays, there was not a clear pattern. More sustained work was reported at the elementary level, but activities whose total time lasted more than a week represented only 8 percent of all of the reported activities involving elementary teachers. Activities lasting more than a day were much more common in elementary schools than in middle and high schools. Overall, intensive work in reading, writing, or language arts was relatively rare in 1999–2000. Teachers in the elementary grades were much more likely to have such opportunities than were secondary teachers.

TABLE 4
MODAL DURATION OF PD ACTIVITIES IN
READING/LANGUAGE ARTS
PERCENTAGE OF DISTRICTS REPORTING

Level of School	Typical PD < 6 hrs (1 day)	Typical PD 7-12 hrs (2 days)	Typical PD 13-30 hrs (5 days)	Typical PD extensive, sustained over time
Elementary	48%	24%	20%	8%
Middle School	74%	9%	9%	9%
High School	66%	18%	9%	5%

There were also some interesting differences across the regions. Region 8 districts reported the highest level of activity in reading/language arts and the greatest variety of programs in reading and writing. This partially reflects the high need for improving reading and writing scores in the region's schools, but it also reflects the heavy investment being made by the state in professional development programs for reading and writing in the region. Region 8 also reported more activity in the middle schools and high schools than the other two regions, probably for the same reasons.

Providers and Delivery Strategies

A large variety of providers were reported to be conducting professional development training. More than 40 different providers were offering language arts/reading professional development in the three regions surveyed. This does not include school or district staffs who were the primary providers. Table 5 displays the percentage of the activities conducted by various types of providers. This analysis does not take into account differences in the amount of time associated with the work of different providers. For example, national developers were more likely to be involved with a few school staffs in multi-day

activities while independent consultants and RSC and cooperative staff were more likely to be involved with many school staffs in half-day or one-day workshops. However, the table does provide a general picture of who was working with teachers in language arts and reading.

Private consultants and school and district staff were responsible for half of the professional development activities in language arts and reading. The RSCs and cooperatives were providing another 30 percent. No other sector was playing a major role. Vendors representing textbook companies or staff from schoolwide improvement models were delivering a few sessions. University faculty, especially in the area of writing, was conducting some school and district-based professional development.

TABLE 5
PERCENTAGE OF PROFESSIONAL DEVELOPMENT
ACTIVITIES IN LANGUAGE ARTS/READING
BY TYPES OF PROVIDERS
(N = REPORTED ACTIVITIES)

Provider Categories	Total N = 258	Region 2 N = 86	Region 6 N = 97	Region 8 N = 75
School/ District Staff	23%	36%	23%	10%
RSCs	17%	7%	11%	34%
Cooperatives	12%	21%	0%	15%
Consultants/ Small Firms	27%	25%	31%	25%
KDE	3%	2%	5%	3%
Institutions of Higher Education	3%	3%	3%	2%
Professional Associations	1%	0%	0%	2%
Publishers	6%	0%	16%	2%
National Developers	5%	7%	2%	8%
Federal or State-Funded Projects	3%	0%	10%	0%

Some notable regional differences are apparent in Table 5. Districts in Region 8 were making less use of their own staffs than districts in the other two regions, and relying more heavily on the RSC and private consultants. This may reflect differences in central office staffing across the regions or simply a more assertive RSC. In Region 2, in contrast, districts were relying more on their own staffs and the cooperatives, and appeared to be less reliant on their RSCs for delivery of professional development.

Only a limited variety of delivery strategies were reported. Most activities were of the workshop variety. The teacher leader strategy was being used to disseminate information and do training especially as it related to portfolios and assessments. In addition, the state writing network was highly active, attributable in large part to regional university involvement and funding that predated KERA. Teacher-to-teacher learning is a key feature of the Kentucky Writing Project, and it was reported that in some cases, entire faculties were part of the network. There also seemed to be strength in its regional model—teachers had mentors and coaches who were accessible. What was particularly compelling about the writing project was that respondents reported classroom follow-up. What started as primarily high school professional development has, in recent years, engaged significant numbers of middle and elementary school teachers. In fact, in the past several years, participation of elementary teachers in writing workshops and writing academies was higher than their secondary counterparts in the regions sampled. With the exception of the writing project, most of the professional development was still being delivered in workshop formats, and few examples of coaching and job-embedded professional development were reported.

Unmet Needs in Language Arts/Reading

Although a great deal of the professional development is being conducted in the areas

of language arts and literacy, and such activity is reaching large numbers of teachers, all but one of the district coordinators responding to the survey reported unmet needs in this area. Improving reading instruction was the most frequently mentioned need in all three regions. Twenty-four of the respondents identified strengthening teacher knowledge of how to teach reading as a major unmet need. Curriculum implementation was also mentioned frequently. One respondent indicated that there is not nearly enough connection between reading and writing:

“Things are program-based and don’t connect. Subjects are taught in boxes. Writing should spring from reading and reading from writing. It just isn’t happening.”

A few districts reported the need for professional development in teaching diverse student populations and meeting the needs of all students.

TABLE 6
UNMET NEEDS IN LANGUAGE ARTS/READING
IDENTIFIED BY DISTRICT COORDINATORS

Content Domains	Regions		
	2	6	8
1. Support for implementing new curriculum materials.	5	6	4
2. Strengthening teacher knowledge of approaches to writing.	3	3	2
3. Strengthening teacher knowledge of approaches to reading.	8	9	7
4. Aligning curriculum with standards, programs of studies, and across content areas; curriculum articulation across grades.	2		2
5. Integrating technology		1	
6. Addressing needs at particular grade levels.			
6a. Elementary	1	2	
6b. Middle school	2		
6c. High school	2	1	
7. Diagnosis of instructional needs; assessing students.	2		

Interestingly, only a handful of the district coordinators mentioned the improvement of reading and writing instruction in middle schools and high schools as an unmet need. This seems odd given the poor assessment results in these domains at these levels and the lack of current professional development opportunities intended to help secondary teachers improve curriculum and pedagogy in reading or writing.

V. OPPORTUNITIES IN MATHEMATICS

Learning Opportunities

The responding districts reported that there was slightly less than half as much activity in mathematics than in language arts and reading. Moreover, the distribution of the activity across levels differed slightly. Whereas in language arts and reading, almost all schools were engaged in some activity, there was a somewhat less equitable distribution of learning opportunities in mathematics. Following our rough guide of an 80–10–10 distribution of mathematics teachers, the data show that the elementary schools were receiving less than their fair share of attention in mathematics and the middle schools were receiving more than twice as much as would be predicted. Ten districts reported they were doing nothing for elementary math teachers, ten listed nothing for middle school math teachers, and 13 listed nothing for high school math teachers. Table 7 displays the range of the activities by region and level.

TABLE 7
MATHEMATICS PROFESSIONAL DEVELOPMENT OPPORTUNITIES AS DESCRIBED BY DISTRICT COORDINATORS*

	ES	MS	HS
Total Person-days	3023	1492	897
Percent of the total at all levels	55.9%	27.6%	16.6%
Domains of Professional Development			
CSRD Support	11.6%	0.1%	0%
Curriculum Support	15.7%	9.2%	37.7%
Pedagogy	32.6%	57.1%	29.4%
Alignment and Articulation	24.7%	17.3%	13.7%
Technology for Instruction	4.7%	5.0%	14.7%
Assessment and Use of Data	6.6%	5.0%	2.8%
Other	4.0%	6.2%	1.7%

**Reported activities of less than six hours duration are not reflected in the table nor are activities that are more general in nature, such as professional development related to leadership, or attendance at national and state conferences.*

The state has mandated completion of algebra I as a high school graduation requirement starting in 2001, so algebra is high on everyone's list of things to do. Algebra Across the Grade Levels, Algebra for All, and new ways of teaching algebra like using Algebra Tiles or "Hands on Equations" are being offered to many teachers. Curiously, at the same time that everyone is focusing on algebra, reform-minded math educators are being encouraged to promote integrated math curricula. Some district coordinators mentioned promoting both at once as a challenge.

Among the 42 districts reporting some kind of math professional development, most reported activities of very short duration. The typical professional development activity at all three levels lasted less than two days. The overall patterns of time allocation did not differ much by level. Only nine districts reported that most of their major opportunities were extensive and sustained. These usually involved turnkey training. However, there were some promising examples of more

sustained work, most notably the opportunities being offered through ARSI, the School Mathematics Leaders program, and the regional content academies. Most of the districts engaged in more extensive work were participating in the Appalachian Rural Systemic Initiative (ARSI). ARSI trains and supports teacher partners who then work on an ongoing basis with other teachers at their schools or at other schools in their districts. With the support of principals and other district leaders, these efforts can have broad reach in a district and are perceived as being highly effective. The School Mathematics Leaders is a network of teachers who represent their school at one-day training sessions each spring and fall, and then do turnkey training in their schools. The state-sponsored content academies were just beginning as this study was conducted.

TABLE 8
MODAL DURATION
OF PD ACTIVITIES IN MATHEMATICS
PERCENTAGE OF DISTRICTS REPORTING

Levels of School	Typical PD < 6 hrs (1 day)	Typical PD 7-12 hrs (2 days)	Typical PD 13-30 hrs (5 days)	Typical PD extensive, sustained over time
Elementary	65%	27%	6%	2%
Middle School	67%	21%	8%	4%
High School	72%	19%	5%	4%

There was considerably more activity in mathematics reported in Region 6, and much less reported in Region 8. More attention to implementing new math curriculum and strengthening teachers' content knowledge was reported in Regions 2 and 6 than in Region 8. These data seem inconsistent with the active role that the RSC has played in Region 8 in promoting the improvement of mathematics instruction and providing professional development for teachers, and with the work of

ARSI. Because both of these efforts relied heavily on volunteer teachers, they may simply not have been on the radar screens of district coordinators. Or they may have been reaching only a few districts and schools.

Providers and Delivery Strategies

Putting aside the many school and district staff involved in delivering professional development in mathematics, over 40 providers were identified in our survey of the three regions. Table 8 shows the distribution of professional events led by various types of providers. It is clear that school and district staff and RSC consultants were doing most professional development. Overall, they combined to account for 40 percent of the activities. Independent consultants were playing major roles in Regions 6 and 8; the consortium was playing a significant role in Region 2. Region 8 seemed to be relying less on local staff and more heavily on one National Science Foundation-funded project, ARSI, and the RSC than the other two regions. ARSI was a major provider in Region 8. ARSI was making a major contribution towards deep and sustained professional development in mathematics (and science), through teacher partners who received extensive and ongoing professional development and then spent part of each school day working with other teachers at their school. At the same time, ARSI delivered shorter workshops in districts and schools, on requested topics related to mathematics and science.

What is most striking about the data are the small roles being played by institutions of higher education, national developers, and professional associations. These organizations play more prominent roles in professional development in other states. However, it should be borne in mind that these data do not include the professional development activities of individual teachers whether they were reimbursed for them or not. They may

have been more highly involved with professional associations and university coursework than the data suggest.

TABLE 9
PERCENTAGE OF PROFESSIONAL DEVELOPMENT
ACTIVITIES IN MATHEMATICS BY TYPES OF PROVIDERS

Provider Categories	Total N = 191	Region 2 N = 62	Region 6 N = 86	Region 8 N = 43
School/ District Staff	27%	32%	28%	19%
RSCs	13%	13%	12%	16%
Cooperatives	8%	21%	0%	5%
Consultants/ Small Firms	16%	8%	17%	25%
KDE	5%	3%	7%	5%
Institutions of Higher Education	3%	6%	1%	0%
Professional Associations	3%	1%	7%	0%
Publishers	7%	1%	12%	5%
National Developers	4%	10%	1%	2%
ARSI	10%	1%	6%	30%
Other Federal or State-Funded Projects	4%	5%	6%	0%

The data on mathematics also show that short-duration workshops remain the primary delivery strategy. However, there were also a number of examples of coaching being used, and several districts reported using study groups. Only four of the 50 responding district coordinators mentioned mathematics academies. In two cases they referred to the Eisenhower math/science academy which took place during the summer of 1999 at Western Kentucky University. In two other cases, they referred to the new state-supported math academies which were being planned during the '99-00 school year and which would take place during the summer of 2000. Math acad-

emies, also partially funded with Eisenhower funds, were planned for all eight regions across the state, and were linked to a university or community college in each region. These academies were designed to bring together a group of teachers for three consecutive summers and provide follow-up and networking during the school year. The participants determined the curriculum, but the focus was on mathematics topics in the core content standards.

Unmet Needs in Mathematics

As noted earlier, the district coordinators reported on the unmet needs of teachers. Although they reported a great deal of current activity in mathematics, they still saw significant needs in this area. Their ideas are summarized in Table 10. The data show a shift in focus away from pedagogical skills to teacher content knowledge and the adoption and implementation of good curriculum. This is consistent with other reports on needs of Kentucky's teachers.

TABLE 10
UNMET NEEDS IN MATHEMATICS PROFESSIONAL
DEVELOPMENT AS DESCRIBED IN PDC SURVEYS

Content Domains	Regions		
	2	6	8
1. Curriculum or materials; applications for delivering the curriculum; help in implementing curriculum.	3	5	6
2. Raising or setting expectations; reaching all students; addressing needs of diverse learners.	6	1	1
3. Teacher knowledge of curriculum content.	3	8	2
4. Teacher knowledge of instructional strategies and techniques; development of skills and study habits; ways to use hands-on or manipulatives.	8	5	2
5. Aligning curriculum with standards or program of studies; aligning curriculum across content areas; articulation across grades.	2	1	2
6. Technology integration.	0	5	1
7. Addressing needs at a particular level.			
Elementary	1	4	1
Middle school	2	2	
High school	2	2	
8. Diagnosis of instructional needs; assessing what students know.	1	1	2
9. Making curricular connections; integrating subject matter or applying learning to real-life applications.	3		

VI. BEST PRACTICES IN PROFESSIONAL DEVELOPMENT

In responding to our inquiry about what was “the best” professional development they had observed or experienced in both reading/language arts and mathematics, district coordinators expressed strong preferences for curriculum-related activities that were practical and included follow-up support. They described these activities as being focused on instructional content and teaching strategies in specific curricular areas. We found a deeper and broader understanding of professional development than we had observed in previous work in Kentucky schools. For example,

respondents commented on the value of collaborative efforts and sharing among teachers, the potential of coaching and study groups, and the importance of follow-up activities and monitoring classroom implementation. The most effective professional development strategies were described as ones in which the following activities occurred:

- teams of teachers received specialized training and then worked with colleagues;
- a curriculum specialist or coach worked with teachers in their classrooms;
- there were on-the-job options such as study groups, collaboration with colleagues, scoring of student work, and teacher networking;
- intense training in a content area was accompanied with follow-up and monitoring;
- teachers practiced new methods and met to discuss their implementation; and
- teachers worked together to develop new curricular units and activities.

In interviews, most of the RSC consultants, district coordinators, and providers of professional development also seemed to understand and appreciate the kinds of professional development being advocated by reformers and by the National Staff Development Council. They mentioned training that was linked to curriculum, was experiential, was deeper and more intense, and was sustained over time.

The professional development identified as “best” by the respondents tended to track what was actually happening in their districts. For the most part, the areas in which district coordinators reported professional development being conducted were then identified as the ones in which the most effective professional development was occurring. In short, the respondents thought that their districts were working in the right areas, even if they were not yet doing it quite right. In the reading and language arts area, most districts mentioned writing, especially when entire schools were involved in the training and follow-up. One district coordinator described the most effective training as follows:

“writing process training in elementary school because it has involved demonstration teaching in classrooms with students and has been carried out over an extended period of time.”

In addition, specific reading programs, such as Reading Recovery or Project READ, and reading strategies were listed as highly effective programs. One district coordinator described the district-wide impact of training in the Reading Renaissance program:

“The most effective because of the breadth of impact is Reading Renaissance. All elementary schools in our district use Accelerated (sic) Reader. This workshop helped teachers analyze the students performance better thus make better use of the program.”

Although on one level these responses suggest that districts had been able to identify professional development that they believed was effective in the areas they had identified as priorities, there still seemed to be unmet needs. The respondents expressed some frustration about how to help all students be successful readers and writers and to master mathematics. The respondents also conceded that most of the professional development being offered fell far short of their vision of the ideal experience. In general, it is not extensive enough to meet the needs of teachers, and there was seldom any follow-up to help teachers put what they had learned into practice. Moreover, almost all of the respondents told us that they had no data on how professional development was affecting practice. They were relying on anecdotal feedback from teachers and administrators. A few reported that they visited classrooms themselves to see what teachers were doing.

There were also some comments about the importance of student-centered learning. District coordinators reported that teachers wanted opportunities to learn how to provide

students with hands-on applications so they could apply math to everyday living; how to work with students in different media; how to teach algebraic concepts to diverse populations of students; and how to provide for special education inclusion.

VII. EMERGING DISTRICT PRIORITIES

District coordinators were asked what they felt their priorities were for professional development in general for 2000-2001. Here a somewhat different pattern of responses emerged. Over a third of them (19) mentioned curriculum alignment and nearly a third (14) mentioned curriculum implementation and support. Improving language arts instruction including reading and writing was identified as a priority by 15 of the respondents, but only two identified mathematics instruction. But beyond these three major areas, there was little consensus. Their responses produced a diverse list including improving instructional practice across the board (8), school safety (8), use of technology (8), integration of subject matter (8), better needs assessment and monitoring of the consolidated plans (5), grade level exit standards (3), supporting new teachers (3), and then finally mathematics (2). Their priorities fit with the current emphasis on literacy, but did not mesh well with their own vision of effective professional development as being closely linked to the curriculum. And we cannot account for the low priority apparently being given to professional development in mathematics by these district coordinators.

VIII. BARRIERS AND ISSUES

Competing agendas, providing adequate time for professional development, getting teachers to recognize the need for strengthening their content knowledge, obtaining buy-in from entire faculties, and finding good opportunities for teacher learning were the biggest barriers.

ers to effective professional development according to our sources.

Competing agendas

Professional development decisions, theoretically, are informed by the consolidated plan, which is built around assessment data. The two-year planning cycle, which can be modified in the intervening year, allows for a focused school improvement agenda. But too often, we were told, professional development activities were altered to address more immediate problems or to give the impression of resolving a crisis situation. This phenomenon was especially apparent during the 1999-2000 school year, when many plans were amended to create training and other professional development opportunities for faculties around safe and orderly schools, violence prevention, and conflict resolution. The allocation of school dollars and time is the jurisdiction of the school's site council, and, regardless of information gleaned from student achievement data, councils can make decisions to meet other school-wide needs.

District coordinators also reported another agenda problem—trying to improve instruction in all of the core subjects simultaneously. This is a problem of time and resources, and it is most acute in the elementary schools. The coordinators felt that teachers could not work on their understanding of content and their pedagogy in reading and mathematics at the same time, let alone address needs in science and social studies. But in many districts, teachers were being asked to do exactly that. Some coordinators expressed a concern that this led to superficial treatment of both content areas.

Time for professional development

Some respondents indicated that having four days of professional development embedded in the school calendar was both a positive and

a negative. The positive aspect was that it allowed professional development activities of sufficient intensity and duration that it was possible to do more than “scratch the surface.” In addition, faculties were able to engage in learning that paralleled more closely what they were doing with students. One provider talked about the importance of modeling:

“Student writing should emerge from the learning, not as an assignment. Writing workshops allow us to model this with teachers.”

The state's funding of four days, however, was perceived as a mixed message. Some teachers saw the importance of continuous growth while others believed that after four days of professional development, “they were done.” A cooperative director discussed the dynamic around designating a specific number of professional development “days”:

“The four days is a double-edged sword. There is a perception that four days is all it takes to upgrade our skills. Some teachers come to workshops for the sign-in sheet. This is a much bigger problem than lack of money.”

Another downside according to the district coordinators was related to the crowded agenda problem discussed above. Administrators and regional and state officials were too tempted to use professional development to cover any need that arose. “Whatever the problem, professional development is the solution,” said one. The four days seemed like a lot of time to those who thought of professional development as workshops for teachers, but it was seen as far too little by those concerned about deepening teacher content knowledge and changing their classroom practice.

And despite the recurring discussions about making professional development more “job embedded,” the vast majority of teacher learning opportunities were taking place after

school, on the weekends, or during the summer months. In many cases, months passed between teachers learning a new instructional strategy at a workshop and an opportunity to practice it with students in a classroom setting. Our respondents viewed finding uninterrupted learning time for teachers as a major challenge. During the school year teachers' out-of-classroom time was often spent with planning, parent conferences, committee meetings, and paperwork.

Teacher Knowledge of the Curriculum

Most respondents recognized teacher subject matter as a critical factor in raising student performance. This was particularly true in the middle grades where so many teachers held elementary certification and lacked either majors or minors in the subjects they were teaching. However, most conceded that their districts were doing little to address the problem. The exception was in the area of elementary literacy teaching where extensive and sustained work appeared to be underway in a number of districts.

Teacher subject matter knowledge has become a controversial issue in Kentucky as some teachers objected to assertions that they needed deeper understanding of curriculum content. Yet the need for deeper understanding of content to help students meet higher standards seems clear. However, it is not seen as an easy problem to solve. The four days of professional development time are not sufficient to address it—especially given the crowded professional development agenda. The universities do not always offer courses that are well aligned to the curriculum teachers are asked to teach. The new content academies are expected to help but they will serve only small numbers of teachers, and their impact is yet to be determined.

Other strategies need to be considered. One PDC, after describing several kinds of embedded professional development being offered in his district, mentioned a need to help teachers flesh out curriculum and align it with the content standards. He worried about how they were going to teach the content (given their backgrounds) and where the resources would come from to teach it. He noted that in his district:

“One-two-day workshops are rare unless they are real specific. One model that seems to work well is a once a week course – one evening a week, pay the teachers, and they bring their work from the classroom. These are taught by college professors, and ARSI teacher partners.”

Still another PDC said she was pleased with the way things were going and with her schools' reliance on professional development provided by independent consultants. But she recognized that to date the professional development had been about things like assessment, program of studies, and the integration of technology. Now, she felt that they were going to have to get more content specific, and go “beyond assessment and accountability.”

Another PDC put it like this:

“There has been more activity in the last three years than in the 20 years preceding. Why hasn't it had a greater impact I wonder? I care so much. Improving math scores is the most important thing in my work life. I don't know why others don't see this as so important. Perhaps being good at math and science in Kentucky is viewed too much as a clan thing, something that the McCoy clan has always been good at [but not the rest of us]. The population as a whole just doesn't think it should be involved in things like math and science.”

While strengthening teacher content knowledge is seen as a major need, few of the respondents felt that they had a handle on how to address it.

Lack of Follow-up Support

Throughout this report, the issue of inadequate follow-up has been raised repeatedly. Almost everyone recognized the importance of follow-up, and valued highly the programs like ARSI that provided for it. However, in most instances, it was missing. Respondents told us why. The problem is partly a matter of belief about learning, partly a matter of resources, and partly inadequate coordination of efforts. Many school board members and even many school administrators believe that teachers should come to the job prepared and that professional development simply helps them refresh or supplement their skills. They do not understand what it takes to change classroom practice. Follow-up is something that weak teachers might need, but the others ought to get it the first time. There are also resource problems. Most districts do not have supervisors in all subjects, and building principals are seldom knowledgeable about curriculum and instruction in all subject areas and often are too busy to get into classrooms. So who is available to do follow-up? It seems that external resources such as those provided by ARSI or the other state programs are needed to buy teacher time to provide mentoring and coaching. That leads to the third point. If a district were really focused on instructional improvement, and some are, then it would be the work of the supervisors and the principals to see that professional development was having an impact on practice and to provide incentives and support for teachers. This was not the organizational culture in the vast majority of the districts that were examined in this study.

Obtaining Buy-in from Faculties

In our interviews, teacher resistance to professional development surfaced as a serious prob-

lem. Not all teachers see a need to improve their knowledge and skills. Many have experienced poorly designed or irrelevant professional development in the past and are skeptical about its value. Others resent the time it takes and feel the time might be better spent on lesson planning or other job-related tasks. Some view teaching as a function of an individual's attributes rather than something that can be learned, and therefore do not believe that they can improve their practice through professional development.

It is also a rare faculty who agrees on all aspects of a school improvement plan. Even when there is agreement on the overall focus and/or direction of a plan, there may be disagreement about the strategies used to implement it. Therefore, it is often the case that when faculties engage in whole school reform efforts or the adoption of new curriculum, some will be disengaged or even disruptive.

For these and other reasons, not all faculty members enthusiastically embrace professional development. Persuading them that professional development will help them improve both their practices and learning outcomes can be difficult given their previous experience with in-service programs. Superintendents, principals, and staff development coordinators struggle with the mandatory nature of professional development because it is often those who do not want to attend who most need the new learning. But on the other hand, requiring attendance of those who don't want to attend can undermine the effectiveness of the experience.

Creating a culture in which classroom practice is examined and discussed and in which constructive criticism and reflection are encouraged takes more than four days of workshops. It requires persuasive leadership, incentives, and demonstration proofs. Principals and district administrators need to be prepared to build such professional cultures; it should be seen as a primary focus of their work. Many of

the district staff development coordinators reported that principals and superintendents created barriers to their work rather than helping them build an organizational culture that fostered learning. Many of the school and district leaders were perceived by RSC staff and their own district coordinators to be lacking in understanding of what it takes to engage teachers in instructional improvement, to persuade them to participate in high-quality professional development, and to support them when they do.

Finding Appropriate External Support

Several district coordinators asked us for lists of recommended providers. This request did not seem unusual. With KERA's support for school-based decision making, district coordinators were often being called upon to offer advice and assistance to schools with varying needs and requests. Many felt ill-prepared to give advice. Where should they go for assistance? A good list would have been helpful, even for coordinators who knew that one-shot workshops were not the final answer. Evidence of effectiveness would be even better. Instead, they were relying on word-of-mouth recommendations.

District coordinators were dealing with many kinds of professional development initiatives in their districts. Foci and formats varied widely. There were one-shot workshops; sustained efforts such as ARSI; content-rich experiences such as the middle grades academies; turn-around models such as the school math leaders network; vendor-related workshops such as training that accompanies new textbook adoptions, a set of math manipulatives, or graphing calculators. District coordinators wanted to know what was working, but they had no reliable sources of data about the effects of various learning opportunities on practice. One serious unmet need was monitoring teacher use and implementation of

what they were learning and checking on their progress towards goals. But links between professional development and supervision appeared to be rare. They were generally seen as quite separate functions, often carried out by different individuals who focused on different aspects of teaching and learning.

Another broad concern raised by the RSC staff concerned the lack of elementary school expertise in the new crop of RSC consultants. Turnover associated with the state's restructuring of the RSCs had produced staffs who were more content-oriented. One new RSC consultant, a math educator with 27 years of high school experience, was concerned about what to do when she was called upon to work at the elementary school level: "I don't have the background." Another of the RSC consultants said that she was the only elementary math program support person in the state and she "trades" her services with other RSCs who send her experts for middle and high school.

IX. CONCLUSIONS

The most obvious conclusion to draw from this exploratory study is that professional development in Kentucky has changed for the better. We found more of it, and it was more focused on curriculum and instruction. There was some thoughtful work being carried out in writing, reading, and mathematics. However, it also was quite conventional in many respects. There was still heavy reliance on workshops and external consultants. The content was quite fragmented, and there was seldom any follow-up.

A second conclusion is that the quality of the experiences provided for teachers varied widely. Quality was highly dependent on the vision of school leaders and, to a lesser degree, on the skill of the district staff development coordinator. It also depended on whether you were an elementary teacher or a high school

teacher. There seemed to be more sustained, intensive work going on in the elementary grades. This was often a function of external funding. Schools with the good fortune to be connected to a sophisticated partner like ARSI or to be the recipient of a literacy grant offered richer opportunities for their teachers.

A third conclusion is that reading/language arts was receiving considerably more attention than mathematics in the 1999-2000 school year. This reflected the funds available for literacy programs and perhaps the greater willingness of elementary teachers to work on reading rather than to expose their weaknesses in mathematics. However, gaps were apparent in reading, particularly at the secondary level where teachers were offered few opportunities.

A fourth conclusion that can be drawn from the data is that the private sector is playing a considerably smaller role than expected by policymakers who envisioned a marketplace that would attract providers and stimulate the development of high-quality experiences for teachers. Not only was the private sector role small, but it consisted largely of small players who lacked the capital to develop such opportunities. The most carefully designed, intensive learning experiences were being provided by organizations supported with public or foundation funds such as ARSI, DWoK, the Kentucky Writing Project, and the various literacy programs. And KDE had found it necessary to launch content academies in all eight regions to ensure that teachers had opportunities to deepen their subject matter knowledge. The marketplace was not working as had been expected, but neither was the public sector, as the universities seemed to be sitting on the sidelines.

A fifth conclusion concerns the accessibility and quality of information about professional development opportunities and providers. There is not much information available to help schools make informed choices. Some of

the information needs to be provided by the larger professional community. The research community and the professional associations need to join forces to produce usable, research-based materials that would help school staffs determine a response to a performance problem that has the potential for real impact. What should the content of professional development be? Once that question is answered, then it is possible to determine if it can be done in-house or whether outside help is needed, and if so, who offers the best help. Answering these questions requires simpler data sets—lists of providers, where they have worked, what evidence they have of success, and so on. But schools and districts also need the capacity to collect data on their own. Well-designed follow-up surveys for teachers and simple observation instruments linked to particular training would be helpful. Rethinking the role of the district professional development coordinator to increase the likelihood of effective coordination and links between professional development and supervision would also help.

What about our four original research questions? Let's examine what we learned about the answers to these questions in order.

1. How are professional development needs being determined?

The consolidated planning process was determining the professional development agenda as it was intended to. This had the benefit of getting school staffs to attend to assessment data, but at the cost of focusing many of them on short-range objectives. It also sometimes focused attention on the content that students were struggling with rather than on the knowledge and skills teachers needed to teach that content to students with varying level of achievement and motivation. The assumption sometimes seemed to be that if the teacher knew what the students were supposed to know, then they would be able to teach it. This

is a simple-minded view of teacher content knowledge. It ignores the depth of subject matter knowledge and related pedagogical knowledge that teachers must have to recognize and overcome students' skill deficiencies and conceptual misunderstandings.

Nevertheless, it was clear that the schools were in charge of setting priorities, and that district and regional personnel were exercising only modest influence over their decisions. The ever-present concerns about improving the results on the next round of testing and the limits of time (the four days) and money were major constraints on what school staffs choose to learn. But awareness of the good practice and the limited options available were also a constraint. Workshops offering classroom techniques or instructional activities were the primary genre of professional development. Untested strategies were sometimes offered as remedies to serious instructional and performance problems. But the real problems were the paucity of robust strategies and the failure to recognize them when they were available. When good options like ARSI or the literacy initiatives or the content academies were available, some schools and teachers seemed to reach out for them. But others did not. Those who took the long view and sought to improve classroom practice were not yet shaping the overall landscape of professional development.

The system does seem to be functioning rather well in the sense that it focuses on the needs identified by the schools and responds to them. The major problem seems to lie in the ways in which those needs are defined. However, better coordination among the school, district, and regional actors could result in more intensive, more targeted professional development. The district coordinators in particular could play more effective roles if they had some training, some status, perhaps more authority over funds at the district level, and access to better information. Their roles

and performance vary widely. There is great potential for improvement.

2. What is actually going on in mathematics and language arts professional development?

The answer is a great deal, although much less at the middle and high schools level than in the elementary schools. The intensity and quality of the work are generally unknown, but it can be assumed to vary widely. District and school staffs remain the primary providers and the one-day workshop the primary format. There are numerous promising activities, but many of them are associated with special funding that privileges those who have the initiative or good fortune to get involved. The success of the literacy initiatives could alter local perceptions of professional development. Similarly, the new regional content academies offer promise of changing the professional development environment.

3. What needs do key stakeholders perceive as being unmet?

The unmet needs have been described in detail earlier, but it is clear that follow-up support for implementation of new curriculum as well as programs that address teachers' knowledge of their subjects and their command over related pedagogical knowledge rank high on most observers lists of unmet needs. However, when asked directly about unmet needs, district professional development coordinators produced a long and diverse list. Although it was encouraging that many of them identified improving the teaching of reading as a priority, it was discouraging they did not mention teachers' content knowledge in the other core subjects. In fact, they hardly mentioned those subjects at all. Instead, they offered a "meet every need" view of professional development that is usually seen as one of the reasons why it is ineffective. Sorting out the important needs from all of the possible needs should be a priority. Staying focused on improving instruction should be

seen as the hallmark of good professional development.

4. What are the barriers to providing the curriculum-related professional development that observers felt teachers need (and perhaps want)?

One conclusion here is that the inadequate supply of high-quality opportunities is a problem. There seem to be a lot of providers—independent consultants, RSCs, vendors of materials, national developers like Accelerated Math and Core Knowledge, CSRD models like Success for All and DWOK, university projects supported by state and federal grants, initiatives like ARSI, and professional associations. And, of course there is the largest provider group—the district and school personnel who work with their peers. The schools (and the districts) need help choosing from these options. They need to be able to recognize the roles of each kind of provider and what they can and cannot do, so they can make informed decisions about their use, and effectively coordinate their efforts. To the schools it is a noisy market; it is hard to sort out the good stuff.

As noted above, part of the solution is better information. The state will have to provide leadership here as few districts have the capacity or the inclination to collect and report data on professional development voluntarily. It is especially important to be able to link professional development with changes in classroom practice and student achievement. This should be done in order to ascertain what types of activities produce the best results, to encourage schools to adopt more effective approaches to professional development, and to show the legislature and public that professional development can be a good investment.

This may require some highly focused studies to determine the long-term effects of particular approaches to professional development on

teachers' practice and student learning. It is important to take the long-term view as it takes time for teachers to make significant changes in their practice, and it is sustained gains in achievement that are important. This is research that the state should support given the size of its investment in professional development.

One way to increase the supply of high-quality opportunities is to reward success. Schools that have developed strong in-house professional development programs might be given small grants to help other schools in their district or region replicate their success. Providers who can demonstrate strong effects on practice and performance might be given grants to extend and expand their work. Too many good opportunities dry up when project funds run out. The state should view initiatives supported by federal agencies or foundations as development efforts that should be continued with state funds if they prove effective.

There are also problems on the demand side. The four days are limiting, as is the funding. Many teachers do not accept the premise that they need to deepen their content knowledge. They will need demonstration proofs and opportunities to safely engage in high-quality experiences to overcome their disbelief.

Is professional development in Kentucky improving? Consider the following observation by a district professional development coordinator:

“Professional development has completely changed. [Before KERA] there was no focus. Almost anything was acceptable. Office keeping chores, making sure people understood their insurance. Audiovisual... mostly how to administer assessment, test-taking skills. Then the focus changed to really looking at instruction – what you could do to help students perform.”

This respondent was actually typical. The vision of high-quality professional development held by the majority of those interviewed was consistent with the emerging national standards and with research. It just did not match the typical activities underway in most schools. But the spread of this new vision was encouraging, even if acting on it remained rare and apparently difficult.

When asked about best practice, district coordinators described a different kind of professional development than what was primarily being offered. They envisioned teachers learning about content and how to teach it; aligning curriculum with assessment and instruction; articulating within and across grade levels; incorporating technology; mentoring, coaching and networking; observing other teachers; reflecting on practice; doing action research; joining study groups; reviewing student work and monitoring student understanding; adapting instruction; attending conferences; serving on local and state committees. Their main problem, which was implicitly there even when they did not mention it, was how to do it all. How do you schedule the time, get people to participate, pay them, and follow through to support their efforts and monitor their progress? Although seldom mentioned in surveys or interviews, one need that seemed obvious when reading the interviews was professional development for the school and district coordinators. They should be members of a community of practice that builds knowledge about how to guide and coordinate PD activities in their districts. They need opportunities to share information about providers that have proved effective for various purposes in their districts.

APPENDIX A

Telephone interviews conducted
between 10/99 and 4/00:

Region 2 (in person)

RSC director

RSC Language arts consultant

RSC Writing consultant

RSC Primary consultant

RSC Mathematics consultant

RSC Accelerated Learning consultant

3 district professional development coordinators

Region 6 (telephone)

RSC director

RSC Primary consultant

RSC Mathematics consultant

2 district professional development coordinators

Region 8 (telephone)

RSC Primary consultant

RSC Language arts consultant

RSC Mathematics consultant

Director of ARSI

2 ARSI consultants

4 district professional development coordinators

2 KDE Division of Curriculum staff

2 professors at Morehead State

3 professors at Western Kentucky University

1 professor at University of Louisville

1 professor at University of Kentucky

Badgett Center director (cooperative)

GRRECC director (cooperative)

Teacher at a school using Accelerated Reader

Director Collaborative Center for Literacy

Development at University of Kentucky

(housing Reading Recovery)

Reading Recovery teacher leader

Director of 2 regional writing projects

Vendor for Accelerated Reader

Vendor for reading and math texts

APPENDIX B

Provider Interview Protocols

Interview of Professional Development Providers in Kentucky

Introduction

My name is _____ and I am working with the Partnership for Kentucky Schools to gather information about the kinds of professional development opportunities available for teachers across the state. In particular we are interested in finding out about professional development in the area(s) of mathematics. Your organization is on a list of professional development providers being used in Region 8, and I was told that you are a person who could give me a good overview about the kinds of professional development you provide.

About Your Organization

(1) Could you tell me a little bit about your organization?

- Probe for size of staff, public/private, specialties, extent of outreach.
- What kinds of services do you offer, and to whom?
- Probe for type of services: workshops, consulting, on-site assistance, etc.
- What kind of work are you doing in Region 8?
- Probe for range of subject areas, and then zero in on math to get a general list of what they do.

[Come back to specifics later.]

(2) How much professional development do you do? Do you keep statistics about the number of workshops you give, on what topics, and how many schools/teachers you have reached? Would it be possible for me to see that data?

(3) How do schools or districts find out about you?

- Probe for networks, lists they are on, etc. (Try to get copies of anything in print, as a source of other PD providers to contact.)

(4) Among the schools you work with, how satisfied do you think schools are with the amount or kind of PD services being provided to them, by you or by other organizations? Do they tell you about what they like, don't like, or what they would like to have that is not yet available? What kinds of PD do you think are needed that are NOT YET available to teachers? What makes you think these things are important or of interest?

Math

(5) Could you tell me more about the specific kinds of professional development activities you do related to math?

- Probe for names of workshops, courses, programs etc in math.

(6) We are especially interested to know how your PD is related to the content of math instruction. Could you go back over the list of courses/workshops that you offer and tell me what content areas they address? And if possible, to what grade levels are these workshops addressed?

In math, for example, do any of your courses address key content areas like:

- Number and Computation
- Geometry and Measurement
- Probability and Statistics
- Algebraic Ideas
- ... and for what grade levels (primary, elementary, middle, high school)

(7) Is any of your PD related to specific instructional materials - textbook series, kits, manipulatives, NSF reform curricula, etc? If yes, why do you focus on these particular materials? If no, why not?

(8) Do you address the pedagogical aspects of this content, e.g., how students learn it, their misunderstandings, and effective classroom strategies?

(9) How would you assess the mathematics knowledge of the teachers who you are working with? Do you attempt to help teachers deepen their understanding of the mathematics that is in their curriculum? How do you do that?

(10) Do you have any data about the impact of your services?

- Probe for evaluation: How do you measure the impact of what you do?
- Do you have any evaluation data that I could get/see?

(11) From your experience, on what basis do you think schools and districts choose professional development topics? And how do they go about choosing providers for the kinds of PD they want?

Conclusion (we are almost finished with the interview):

(12) How can we find out more about what you do?

- Do you have a Website that describes what you do?
- Do you have any promotional materials that you could send to me?
- Do you have an e-mail address?

(13) Reminder that you are going to send me:

- Data about number of districts/schools/teachers reached.
- Evaluation data about impact of your program, and the satisfaction of your clients

(14) Could you tell me the names of some other PD providers in your region, your “competition”? Who does the kinds of things you do, or things that are similar? What are its strengths? Do you know the names of contact people in that organization?

APPENDIX C

Protocols for PDC Interviews

A. District-level staff (PD coordinator)

1. Background - of interviewee, of district, and current PD program [get the story, the evolution of focus].

2. How are professional development experiences planned - who's involved? How are priorities set?

3. What are the major sources of learning opportunities for teachers? How found out about? How do they assess their potential utility?

4. What are the current major PD activities? Why these? Are any focused on curriculum, teaching particular content/subject? Who provides the assistance for teachers? Probe for follow-up support.

5. How do the current activities differ if at all from last year's activities? Why do they differ? Probe for evidence of continuity.

6. Are there instances where PD has been interwoven into other school improvement activities like curriculum development?

7. What activities/experience has been most successful? How do you know? Why are they successful?

8. What activities/experience has been least successful? How do you know? Why are they successful?

8. What kind of data used to evaluate effectiveness of PD?

9. How have changes in assessment and accountability affected PD planning?

10. Name a secondary and an elementary

school in the district that have most consistently followed the district lead in PD. Then -
- Name a secondary and an elementary school in the district that have been most resistant. How do you account for the difference?

11. Anything else that would help us understand PD in the district?

APPENDIX D**District Data Sheet**

The information provided on this data sheet will be used as part of a study of professional development opportunities in Kentucky sponsored by the Partnership for Kentucky Schools. The information you provide will be of great help to us in determining the professional development needs across the state. Please complete the data sheet and return it to us in the enclosed envelope by January 7. Thank you.

—Tom Corcoran, Consortium for Policy Research in Education, 3440 Market St, Suite 560, Philadelphia PA 19104

1. What are your professional development priorities for the 1999-2000 school year? Have your priorities changed over the past two years? If so, why?

2. Please provide us with a short description of the major opportunities currently available to teachers in your district to enhance their knowledge and skill in mathematics and language arts/literacy and for teachers and school administrators to develop their leadership skills. Use the chart provided below.

Major Professional Development Activities in MATHEMATICS and LITERACY 1999-2000					
Names of PD Activities (brief descriptions, by participant level)	Provider of the PD	Estimated number of schools involved	Estimated number of participants involved in prior years	Estimated number of participants involved in '99-'00	Time allotted to the activity for each participant '99-'00
MATH Elementary - Middle School - High School -					
LANGUAGE ARTS/ LITERACY Elementary - Middle School - High School -					

3. In your opinion, what has been the most effective professional development provided in these areas (mathematics, language arts/literacy, leadership) in your district over the past two years? Describe it briefly, and the impact it has had in your district.

MATHEMATICS -

LANGUAGE ARTS/ LITERACY -

4. What do you perceive to be the most serious unmet professional development needs in mathematics, language arts/literacy, or leadership in your district?

MATHEMATICS -

LANGUAGE ARTS/ LITERACY -

LEADERSHIP -

END NOTES

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² Clements, S. 1999. *Kentucky's Teachers: Charting a Course for KERA's Second Decade*. Frankfort, KY: The Kentucky Long-Term Policy Research Center.

³ McDiarmid, G. W. 1999. *Still Missing After All These Years: Understanding the Paucity of Subject-matter Professional Development in Kentucky's Schools*. Lexington, KY: Partnership for Kentucky Schools.

⁴ McDiarmid, *ibid*.

⁵ McDiarmid, G. W. and Corcoran, T.B. 2000. "Promoting the Professional Development of Teachers" in Petrosko, J. and Pankratz, R. (ed.). *All Children to Learn*. San Francisco, CA: Jossey-Bass.

⁶ Kahle, J.B. and Johnson, I.D. 1997. Report on the Cincinnati Urban Initiative. Cincinnati, O: unpublished.

